



October 17<sup>th</sup>, 2005

Mr. Kenneth Bardo  
U.S. EPA Region V  
Corrective Action Section  
Enforcement Compliance Branch  
77 West Jackson Boulevard DE-J9  
Chicago, IL 60604-3507

Re: Solutia Inc. – W. G. Krummrich Plant, RCRA  
Plume Stability Monitoring Plan

Dear Ken:

Enclosed please find revised pages 2-5 through 2-8 of the September 16, 2005 Plume Stability Monitoring Plan. These pages were revised in accordance with your October 12, 2005 email on screen elevations in PSMW-2, 7 and 12. Please remove the corresponding pages from the September 16, 2005 Plume Stability Monitoring Plan and replace them with the enclosed pages.

On-site plume stability monitoring well installation is scheduled to start today.

Sincerely,

A handwritten signature in black ink, appearing to read "Steve D. Smith".

Steven D. Smith  
Project Manager

cc: Distribution List on Following Page

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Chlorophenols are present in the SHU at the downgradient limit of the plant production area (Figure 2-5) and extend 700 feet downgradient of Lot F in the MHU and 1900 feet downgradient in the DHU. The areal extent of chlorophenols in the SHU, MHU and DHU is approximately 115 acres, 92 acres and 517 acres, respectively. Dichlorobenzenes in the SHU are located in two areas of the plant: 1) at the southern end of the Former Chlorobenzene Process Area and 2) the Former Chlorobenzene Storage Area (Figure 2-6). They do not extend past Lot F in the MHU and extend 1900 feet downgradient of Lot F in the DHU. The areal extent of dichlorobenzenes in the SHU, MHU and DHU is approximately 23 acres, 115 acres and 437 acres, respectively,

Phenol is present in the SHU at the downgradient limit of the plant process area, does not extend past the downgradient limit of Lot F in the MHU and extends 800 feet downgradient of Lot F in the DHU (Figure 2-7). Phenol is also present in the MHU and DHU at the upgradient end of the plant process area and the DHU north of the Former Chlorobenzene Process Area. The areal extent of phenol in the SHU, MHU and DHU is approximately 69 acres, 92 acres and 115 acres, respectively.

The areal distribution of BTEX in the SHU, MHU and DHU is similar to benzene (Figure 2-8). The areal extent of BTEX in the SHU, MHU and DHU is approximately 126 acres, 218 acres and 471 acres, respectively,

Based on this information, site-related constituents are migrating preferentially through the DHU, resulting in the farthest downgradient extent of migration and the largest area of impacted groundwater of any of the three hydrogeologic units found at the W.G. Krummrich facility.

### **2.3 Monitoring Well Screen Depth**

Chlorobenzene (MCB) and Dichlorobenzenes (DCB) have the largest areal extent of any of the site-related constituents present in groundwater (Figures 2-3 and 2-6). Because their distribution includes the area occupied by other constituents and they are the constituents that migrated furthest from the facility and are closest to the Mississippi River, MCB and DCB were used to select plume stability monitoring well screen depths.

Selected screen depths for the W.G. Krummrich Plume Stability Monitoring Plan are given in Tables 2.1 to 2.15. These screen depths, which are based on the highest detected groundwater concentrations in the nearest vertical profile to the plume stability monitoring well location (Figure 2.9), are summarized below:

Summary of Selected Plume Stability Monitoring Well Screen Depths (Feet below Ground Surface)

<u>Well</u>	<u>Screen Depth</u>	<u>Well</u>	<u>Screen Depth</u>	<u>Well</u>	<u>Screen Depth</u>	<u>Well</u>	<u>Screen Depth</u>
MW-1	43	MW-6	110	MW-11	104	MW-16	120
MW-2	72	MW-7	119	MW-12	100	MW-17	127
MW-3	72	MW-8	73	MW-13	114		
MW-4	97.5	MW-9	104	MW-14	112		
MW-5	22.5	MW-10	104	MW-15	112		

Note: Depth below ground surface to midpoint of 5 ft. long screen

Plume stability monitoring wells PSMW-1, 2, 3, 4 and 5 are located in source areas and, as a consequence, selected screen depths are in the lower portion of the SHU and the MHU. GM-17 A, B and C is the closest groundwater vertical profile to PSMW-5. The highest detected Total VOC and Total SVOC concentrations at GM-17 A, B and C occur in GM-17 A, which is screened 18 to 38 ft. below ground surface. Based on this information, the screen in PSMW-5 should be installed between 18 and 38 ft. below ground surface. Historical groundwater data (2001) from GM-32, 33 and 34, which are located in the same area as GM-17 A, B and C and PSMW-5, indicate that Total VOC concentrations in wells GM-32, 33 and 34 range from 326,000 to 1,600,000 ug/l. GM-32 is screened from 9 to 24 ft. below ground surface while GM-33 and 34 are screened from 5 to 25 ft. below ground surface. Because the historical groundwater data from GM-32, 33 and 34 indicate that the highest Total VOC concentrations occur from 5 to 25 ft. below ground surface in the area of PSMW-5, this monitoring well will be screened from 5 to 25 ft. below ground surface instead of 18 to 38 ft. below ground surface. To ensure that groundwater quality samples can be collected from PSMW-5 during dry weather conditions, the well screen will be installed from 20 to 25 ft. below ground surface. Depth to groundwater is typically no more than 15 ft. below ground surface but can reach 20 ft. below ground surface in dry weather conditions.

The MHU will also be screened at PSMW-8 because VOC and SVOC concentrations are highest in this hydrogeologic unit, probably as a result of past spills and leaks from the Former Chlorobenzene Storage Area.

Screens will be installed in the DHU at PSMW-6, 7, 9, 10, 11, 12, 13, 14, 15, 16 and 17. These monitoring wells are located downgradient of the Plant Process Area where the highest groundwater concentrations are found in the deeper portions of the alluvial aquifer.

Screen depths generally get deeper with increasing distance from the W.G. Krummrich facility downgradient boundary. Screen depths at PSMW-6, 7, 8 and 9, located at the downgradient boundary of the plant, average 101.5 feet and range from 73 to 119 ft bgs. Monitoring wells PSMW-10, 11, 12 and 13, which are located approximately half way between the plant boundary and the Mississippi River, have an average screen depth of 104.5 ft bgs and range from 100 to 114 ft bgs. At the Mississippi River, PSMW-14, 15, 16 and 17 have an average depth of 117.75 ft bgs and range from 112 to 127 ft bgs.

This screen depth pattern reflects high concentrations in shallow groundwater in the source areas and high concentrations in deep groundwater in the discharge area as groundwater migrates from the plant and discharges to the Mississippi River.

At location PSMW-2, in the Former PCB Manufacturing Area, MCB and DCB vertical distribution (Tables 2.2 and 2.3) indicates that the well screen midpoint should be 72 to 73 ft. below ground surface. However, there is insufficient data for PCBs in groundwater to identify the proper screen interval. Solutia plans to address this data gap by conducting groundwater profiling in this area. A separate work plan will be developed and submitted to USEPA for this work.

If property access is denied for these proposed locations, monitoring wells will be installed on the closest available property where if the location would still meet the objectives of the groundwater monitoring program.

#### **2.4 Monitoring Well Installation**

URS Corporation (URS) will perform the field activities in accordance with this plan, Standard Operation Procedures (SOPs), and an approved Health and Safety Plan (HASP). URS will coordinate with Solutia personnel to obtain the appropriate permits and clearance to perform the subsurface activities.

The monitoring wells will be installed using rotasonic drilling techniques. The borings will be advanced using an approximately 4-inch diameter by 10-foot long core barrel and a 6-inch diameter override casing. Soil cores will be continuously collected from the core barrel through the length of the boring. The monitoring wells will be installed through the six-inch override casing. Plume stability monitoring wells PSMW-14M, 15M and 16M will be installed in the borehole as wells PSMW-14D, 15D and 16D. Drill cuttings will be containerized and staged per Solutia procedures.

The subsurface stratigraphy will be logged during drilling operations by a qualified field scientist in accordance with the Unified Soil Classification System (USCS) protocols. The field scientist will note soil attributes such as color, particle size, consistency, moisture content, structure, plasticity, odor (if obvious) and organic content (if visible). Soil samples from each boring will be visually evaluated for evidence of impact and screened in the field using a Photoionization Detector (PID). Information pertaining to the subsurface soil and drilling conditions will be recorded in the field on a standard field boring log form in accordance with the SOP-8 (Appendix C). Representative scaled, color digital photographs will be taken of each soil core to provide a record of materials present at this site.

Ground surface elevation will be confirmed at each vertical groundwater profile location and determined for each plume stability monitoring well location prior to well installation. Ground surface elevation at each monitoring well location will then be compared to ground surface elevation at the vertical

groundwater profile locations used to select plume stability monitoring well screen depths. These data will then be used to determine the depth below ground surface of the midpoint of each 5 ft.-long plume stability monitoring well screen. Vertical groundwater profile elevations are listed below:

Vertical Groundwater Profile Ground Surface Elevations, Ft. AMSL

<u>Monitoring Well</u>	<u>Vertical Profile</u>	<u>Elevation</u>	<u>Monitoring Well</u>	<u>Vertical Profile</u>	<u>Elevation</u>
PSMW - 1	TRA1-GPB	413	PSMW - 10	AA-P-1	408
PSMW - 2	TRA2-GPC and D	411	PSMW - 11	AA-P-1	408
PSMW - 3	TRA2-GPD	411	PSMW - 12	AA-GWM-S1	422
PSMW - 4	GM-4A, B and C	404.5		AA-GWM-S2	410.5
PSMW - 5	GM-17A, B and C	410	PSMW - 13	AA-S-1B	411
PSMW - 6	UAA-1	406	PSMW - 14	AA-P-3	410.5
PSMW - 7	TRA4-GPB	416	PSMW - 15	AA-P-3	410.5
PSMW - 8	TRA4-GPC	413	PSMW - 16	AA-GWM-S1	422
PSMW - 9	UAA-3	405	PSMW - 17	AA-Q-1	420

Notes: Elevations in feet above mean sea level

Well screen depths (midpoint of 5 ft. long screens) and screened intervals are provided in the table below.

<u>Monitoring Well No.</u>	<u>Monitoring Area</u>	<u>Estimated Depth Below Ground Surface</u>	<u>Monitoring Well Screen Midpoint Elevation</u>
PSMW - 1	Northern Plume Boundary	43	370
PSMW - 2	Source Area - PCB Mfg. Area	72	339
PSMW - 3	Source Area - CPA	72	339
PSMW - 4	Source Area -North Tank Farm	97.5	307
PSMW - 5	Source Area - CSA	22.5	387.5
PSMW - 6	Northern Plume Boundary	110	296
PSMW - 7	CPA Migration Pathway	119	297
PSMW - 8	CSA Migration Pathway	73	340
PSMW - 9	Southern Plume Boundary	104	301
PSMW - 10	Northern Plume Boundary	104	304
PSMW - 11	CPA Migration Pathway	104	304
PSMW - 12	CSA Migration Pathway	100	306
PSMW - 13	Southern Plume Boundary	114	297
PSMW - 14 M	Northern Plume Boundary	45.5	365
PSMW - 14 D	Northern Plume Boundary	112	298.5
PSMW - 15 M	CPA Migration Pathway	45.5	365
PSMW - 15 D	CPA Migration Pathway	112	298.5
PSMW - 16 M	CSA Migration Pathway	60	365
PSMW - 16 D	CSA Migration Pathway	120	302
PSMW - 17	Southern Plume Boundary	127	293

Note: PSMW-12 screen midpoint elevation based on average of grade elevation and selected screen depth at AA-GWM-S1 (422 ft amsl and 120 ft bgs, respectively) and grade elevation and selected screen depth at AA-GWM-S2 (410.5 ft amsl and 100 ft bgs, respectively).

At the completion of the boring, the monitoring well will be constructed in accordance with state of Illinois guidelines by a permitted Illinois well driller. Monitoring wells will be constructed of two-inch diameter